

REMARKS

Claims 1, 2, and 4-17 are pending in the application. Claim 3 was canceled in the Article 19(1) amendment. New claim 17 has been added.

Specification

Minor changes have been made to the specification to place it in better form for U.S. practice.

Claim Rejections - 35 U.S.C. § 112

Claims 1-16 have been rejected under 35 U.S.C. § 112, second paragraph, because of the use of alternative expression “or”.

Claim 3 was previously canceled.

The rejected claims have been amended to overcome this rejection.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

Further, minor changes have been made to the pending claims, without affecting the scope thereof, to place them in better form for U.S. practice.

Claim Rejections - 35 U.S.C. § 102

Claims 1-7 and 13-14 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Namiki et al. (USP 5,423,203). This rejection is respectfully traversed.

An Article 19 amendment was submitted on September 23, 2005, in which claim 1 was amended to include the limitations of claim 3, and claim 3 was canceled.

From the context of the Office Action, the Examiner appears to have examined the present application based on original claims 1-16. This is evidenced from the fact that the Examiner has rejected claim 3 separately from claim 1.

However, since original claim 3 was dependent from claim 1, and claim 1, as amended in the Article 19 amendment now includes the limitations of claim 3, Applicants hereby respond to the rejection based on Examiner's reasons for rejection regarding claims 1 and 3.

The claimed invention of the present application is provided with:

- a time ratio calculating element for obtaining one of,

- a ratio of a time for which the output of the oxygen sensor is greater than a standard value for the output set between the maximum and minimum values of the output,

- a ratio of a time for which the output of the oxygen sensor is smaller than the standard value for the output, in a predetermined period of time, and

- a value correlating with the ratio; and

- an air/fuel ratio adjusting element for adjusting the air/fuel ratio of the exhaust during the forcible modulation, such that an actual average air/fuel ratio, obtained on the basis of one of the ratio and the value correlating with the ratio obtained by the time ratio calculating element, matches the target average air/fuel ratio.

In other words, the present invention obtains the actual average air/fuel ratio based on one of the ratio and the value correlating with the ratio, and adjusts the air/fuel ratio such that the obtained actual average air/fuel ratio matches the target average air/fuel ratio.

Namiki discloses a failure determination method for an O₂ sensor. As shown in Fig. 1(a), upon conducting the failure determination, air/fuel ratio is set to 12.5% higher (leaner) than the

stoichiometric ratio (14.7) for one second (processing time), and an oscillating air/fuel ratio control is conducted thereafter such that the air/fuel ratio is constantly oscillated between +10% and -10% of the stoichiometric ratio. Namiki specifically states, in col. 5, lines 3-15:

In the example shown in Fig. 1, graph (a), the amplitude and frequency of the oscillation are $\pm 10\%$ and about 2 Hz, respectively. In this case, the air-fuel ratio alternately assumes, with elapse of time, a value which is 10% richer than the stoichiometric ratio and a value which is 10% leaner than the stoichiometric ratio, as shown in Fig. 1, graph (a).

Namiki also states, in col. 5, lines 23-27:

When the O₂ sensor is operating normally, the output voltage of the O₂ sensor changes following a change of the air-fuel ratio; if the O₂ sensor is in abnormal condition, the output voltage does not faithfully follow a change in the air-fuel ratio.

In view of the foregoing statements, Namiki forcefully oscillates the air/fuel ratio between +10% and -10% of the stoichiometric ratio and simply assumes that the output voltage of the O₂ sensor changes following a change of the air-fuel ratio when the O₂ sensor is operating normally, and does not have the “time ratio calculating element” and the “air/fuel ratio adjusting element,” as recited in claim 1.

Claim 3 was previously canceled.

Claims 2, 4-7, and 13-14, variously dependent on claim 1, are allowable at least for their dependency on claim 1.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

Allowable Subject Matter

Applicants appreciate that Examiner's indication that claims 8-12 and 15-16 would be allowable if rewritten to overcome the rejections under 35 U.S.C. § 112, second paragraph, and to include all of the limitations of the base claim and any intervening claims.

However, claims 8-12 and 15-16, dependent on claim 1, are allowable at least for their dependency on claim 1.

A favorable determination by the Examiner and allowance of these claims is earnestly solicited.

New Claim

Claim 17, dependent on claim 1, is allowable at least for its dependency on claim 1.

A favorable determination by the Examiner and allowance of this claim is earnestly solicited.

Conclusion

Accordingly, in view of the above amendments and remarks, reconsideration of the rejections and objections, and allowance of the pending claims are earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Maki Hatsumi (#40,417) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any

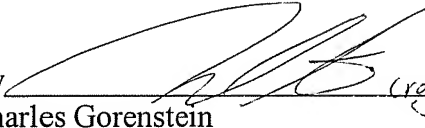
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additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

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Respectfully submitted,

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